

**SECRET***Chasno*

DPD-7280-59

Contract No. A-101  
Amendment No. 21Thompson Ramo Wooldridge Inc.  
Los Angeles 45, California

3 NOV 1959

Gentlemen:

1. This document constitutes Amendment No. 21 to Contract No. A-101, as amended, dated 31 March 1955 between Thompson Ramo Wooldridge Inc., Los Angeles, California, and the United States of America.

2. The following pages of the Schedule (Revised December 1958) have been revised to reflect the correct Spares Listing Revisions and the correct number of Patch Cables (on pages 17 and 18) for Requirement No. 3 as set forth in [ ] letter to [ ] dated September 3, 1959 which contained an enclosure entitled "Contract A-101 Spares Analysis, Requirement No. 3": Pages 17, 18, 23, 25, 26 and 28.

3. Enclosed are new pages 17, 18, 23, 25, 26 and 28, revised 10-29-59. It is requested these new pages be substituted for the pages listed in paragraph 2 above and the superseded pages destroyed.

4. All other terms, conditions and requirements of Contract A-101, as amended, including the consideration, remain unchanged.

5. Please indicate your receipt of this Amendment No. 21 to Contract A-101 and your acceptance thereof by executing the original and two copies hereof. Return the fully executed original and one copy to the undersigned and retain the remaining copy for your files.

Very truly yours,

[ ]  
Contracting OfficerACKNOWLEDGED AND ACCEPTED  
THOMPSON RAMO WOOLDRIDGE INC.

BY [ ]

TITLE *Air. Contracts Dept.*DATE *8 Nov 1959***SECRET**

**SECRET****4. Production Phase - Equipment Requirement No. 3:**

- a. Four (4) playback and time-mark counter equipments (A Rack).
- b. Four (4) duplicating equipments (B1 Rack).
- c. Four (4) duplicating equipments (B2 Rack).
- d. Twenty (20) analysis playback equipments (C Rack).
- e. Twelve (12) frequency indicator equipments (E Rack).
- f. Twenty-Two (22) event-marker equipments (F Rack).
- g. Technical manuals for each equipment item comprising the system, and for the system as a whole, in the following quantities:
 

A Rack - 15 & 1 Reproducible	E Rack - 20 & 1 Reproducible
B Rack - 15 & 1 Reproducible	F Rack - 30 & 1 Reproducible
C Rack - 30 & 1 Reproducible	SYSTEM - 15 & 1 Reproducible
- h. Three (3) reproduced sets and one (1) reproducible set of drawings.
- i. Spares requirement exists (see H.5.c. (1)).
- j. Nine (9) modification kits for analysis playback equipment to provide speed variability.
- k. Eleven (11) modification kits for event-marker equipment to provide compatibility with fourteen-channel data reduction equipment and two (2) moving stylii.
- l. Fifty (50) patch cables.
- m. Additional production costs.
- n. Modification of F Racks.

<u>Reference Contractor's CMCC #'s</u>			<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u>	<u>S. W.</u>	<u>C. E.</u>		
a.	151X5.262	1131X5.44 1132X5.43		
	4 Playback, etc. @ \$13,209.43		\$ 52,839	
b.	151X5.262	1131X5.44 1132X5.43		
	4 Re-record etc., @ \$8,937.13		35,749	
c.	151X5.262	1131X5.44 1132X5.43		
	4 Re-record etc., @ \$11,649.81		46,599	
d.	151X5.262	1131X5.44 1132X5.43		
	151X5.823	1132X5.176		
	10 Analysis @ \$9,960.76			
	11 Analysis @ \$13,371.34*		246,693	
e.	151X5.262	1131X5.44 1132X5.43		
	13 Frequency Ind. @ \$9,206.89*		119,690	
f.	151X5.262	1131X5.44 1132X5.43		
	151X5.823	1132X5.176		
	11 Event Markers @ \$10,580.30			
	12 Event Markers @ \$14,016.49*		284,582	
g.	151X5.262	1131X5.44 1132X5.43		
	151X5.808	1134X5.57		
	Manuals		5,452	
h.	151X5.262	1131X5.44 1132X5.43		
	4 Sets of Drawings		3,295	
i.	Spares - See H.5.c. (1)			

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<u>Reference Contractor's CMCC #'s</u>			<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u>	<u>S. W.</u>	<u>C. E.</u>		
j.	151X5.380	1131X5.81 1132X5.76		
	9 Mod Kits - C Rack @ \$314.12		\$ 2,827	
k.	151X5.380	1131X5.75 1132X5.65		
	11 Event Markers - Mod @ \$1,361.74		14,979	
l.	151X5.382	1131X5.84 1132X5.82		
	50 Patch Cables @ \$246.95		10,866	
m.	151X5.754	1131X5.114 1132X5.151		
	Additional Production Costs		196,453	
n.	151X5.761	1131X5.119 1132X5.160		
			5,726	
*	151X5.990			
	Reduction due to Cancellations		(56,000)	
	TOTAL		\$ 969,750	
	Charge to pack, inspect & ship remaining material		1,016	
	TOTAL		\$ 970,766	

25X1

## ESTIMATED COSTS:

- E.1.  
E.2.  
E.3.  
E.4.

TOTAL THREE-CHANNEL  
DRE FOR ELECTRONIC  
SYSTEMS 1 AND 3:

F. GROUND DUPING AND ANALYSIS EQUIPMENT - ELECTRONIC SYSTEM NO. 41. Pre-production Phase:

- a. Research and Development: Fourteen-Channel Data Reduction System: Design, engineering, construction and laboratory and operational test of a fourteen-channel data reduction system suitable for use with Electronic System No. 4.
- b. Prototype Production: Production of one (1) deliverable prototype unit of (i) the fourteen-channel playback equipment rack, (ii) the fourteen-channel duplicating equipment rack, (iii) the power supply equipment rack, and (iv) the timing control equipment rack (G, H, J and K Racks).
- c. Prototype and Engineering Production: Production of two (2) deliverable engineering models and one (1) deliverable prototype each of (i) auxiliary data display equipment and (ii) AGC-data selector equipment all for the fourteen-channel system (M & N Racks).
- d. Development of speed conversion kit and time signal generator for the K Rack.

<u>Reference Contractor's CMCC #'s</u>			<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u>	<u>S. W.</u>	<u>C. E.</u>		
a-b.	151X5.89	1131X5.4 1132X5.2	\$ 77,279	
	151X5.380	1131X5.68 1132X5.60	109,303	
	151X5.754	1131X5.116 1132X5.156		
	Additional for a & b		105,928	
c.	151X5.476	1131X5.93 1132X5.93	174,472	
	151X5.668	1131X5.107 1132X5.132	64,386	
d.	151X5.1003	1131X5.139 1132X5.203	8,839	
	TOTAL		\$540,207	\$540,207

Revised 10-29-59

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<u>Reference Contractor's CMCC #'s</u>	<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u> <u>S. W.</u> <u>C. E.</u>		
Reel and Ring Gear Assemblies (Est)	\$ 1,563	
151X5.1004	20,000	
151X5.1178	10,000	
Special Purchase Requests (Est)	\$ 30,000	
<b>TOTAL</b>	<b>\$196,392</b>	<b>\$196,392</b>

## b. Support Requirement No. 3:

- (1) Fly-Away Kits: One (1) portable Fly-Away Kit (FAK) providing one set of parts, components and sub-assemblies necessary for the maintenance of twenty (20) operational systems at a main or advanced base for a 30-day period. Revisions D & E to Equipment List I (FAK).
- (2) Depot Spares: Spare parts and assemblies for maintenance of the Fly-Away Kit for a 360-day period. Revision C to List II dated 8-30-57.
- (3) Special List of Equipment: One (1) Set of Special List of Equipment (SLOE) for main base support of Electronic System No. 1.
- (4) Spare parts and fabricated components for the repair and retrofit of System I in accordance with Exhibit A of proposal CMCC Doc. No. 151X5.1149.

<u>Reference Contractor's CMCC #'s</u>	<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u> <u>S. W.</u> <u>C. E.</u>		
151X5.262      1131X5.44      1132X5.43		
1 Fly Away Kit	\$ 11,138	
1 Depot Spares	22,639	
1 SLOE (Incl's 3 and 3a)	20,913	
151X5.893      1132X5.182		
List I Rev. D.	1,139	
List I Rev. E. (3 Lists)	8,129	
	<u>\$ 64,008</u>	
151X5.686      1132X5.141		
Additional requirements for Equipment List I, II, VI	\$ 77,506	
151X5.1149      1131X5.153      1132X5.219		
Spare Parts, etc., for repair & retrofit of System I	\$ 40,763	
151X5.1004	\$ 5,000	
151X5.1178	25,000	
Special Purchase Requests (Est)	\$ 30,000	
<b>TOTAL</b>	<b>\$212,277</b>	<b>\$212,277</b>

## ESTIMATED COSTS:

H.1.a.	\$196,392
H.1.b.	<u>212,277</u>

TOTAL FOR SUPPORT OF SYSTEM I

\$408,669\$408,6692. Electronic System No. 2:

## a. Support Requirement No. 1:

- (1) Fly-Away Kits and Depot Spares: Basic requirement exists and will include all remaining parts after quantity cut back. Quantities and composition of FAK for electronic System No. 2 not yet formalized.

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<u>Reference Contractor's CMCC #'s</u>			<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u>	<u>S. W.</u>	<u>C. E.</u>		
151X5.719	1131X5.112	1132X5.146		
FAK for Systems 3 and 3A			\$ 37,759	
151X5.719	1131X5.112	1132X5.147		
Depot Spares (180-Day) Systems 3 & 3A			20,537	
151X5.719	1131X5.112	1132X5.148		
SLOE for Systems 3 and 3A			8,215	
Estimate for additional Spares			<u>20,000</u>	
TOTAL			\$ 86,511	\$ 86,511

## c. Support Requirement No. 3:

- (1) Fly-Away Kits: Three (3) portable Fly-Away Kits (FAK) each providing one set of parts, components and sub-assemblies for maintenance of 20 operational systems at a main or advanced base for a 30-day period. List III, Rev. A, dated 4-18-57 and List III, Rev. C, dated 8-30-57.
- (2) Depot Spares: Spare parts and assemblies for maintenance of Fly-Away Kits for a 360-day period. List IV, Rev. A, dated 4-18-57.
- (3) Special List of Equipment: Basic requirement fulfilled with delivery of SLOE for electronic System No. 1 (set forth and funded in item H.1.b.(3) above). Five (5) test sets, specific to electronic System No. 3 (set forth and funded in item C.4.d) are included in this listing. Contractor's recommendations for any additional equipment specific to electronic Systems No. 3 to be submitted when known. List VI, Revisions E & F dated 8-31-59.
- (4) Spare parts and fabricated components for the repair and retrofit of System 3 in accordance with Exhibit B of proposal CMCC Doc. No. 151X5.1149.

<u>Reference Contractor's CMCC #'s</u>			<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u>	<u>S. W.</u>	<u>C. E.</u>		
151X5.262	1131X5.44	1132X5.43		
1 Fly-Away Kit			\$ 16,231	
1 Depot Spares			32,570	
1 SLOE (See H.1.)			<u>\$ 48,801</u>	
151X5.686		1132X5.141		
Additional requirements for Equipment List III and IV			\$ 35,076	
151X5.1149	1131X5.153	1132X5.219		
Spare Parts, etc., for repair & retro- fit of System 3.			<u>\$ 59,301</u>	
TOTAL			<u>\$143,178</u>	\$143,178

## ESTIMATED COSTS:

H.3.a.	\$ 83,863
H.3.b.	86,511
H.3.c.	<u>143,178</u>

TOTAL SUPPORT FOR  
SYSTEM NO. 3\$313,552\$313,5524. Electronic Systems No. 4 and No. 5:

## a. Support Requirement No. 1:

- (1) Fly-Away Kit: One (1) portable Fly-Away Kit (FAK) providing one set of parts, components and sub-assemblies necessary for the maintenance of System 4 at a main or advanced base for a 30-day period, in accordance with Equipment List AA, Revision A, dated June 16, 1958, which supersedes list dated October 30, 1957.

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- (2) Depot Spares: One set of Depot Spares necessary for the maintenance of System 4 for a period of 180-days in accordance with Equipment List BB dated June 16, 1958, Revision B, which supersedes List dated May 9, 1958.
- (3) Special List of Equipment: Two (2) Special Lists of Equipment (SLOE) in accordance with List CC dated June 16, 1958, Revision B, which supersedes list dated November 8, 1957.
- (4) Fly-Away Kit: FAK for System No. 5 in accordance with Equipment List DD Effective October 14, 1957 which supersedes list dated June 17, 1957.

Reference Contractor's CMCC #'s			Proposal	Contract
Ltr.	S. W.	C. E.	Cost	Amount
a(1)	151X5.382	1132X5.79	1132X5.81	
	151X5.831		1132X5.178	
	1 FAK @ \$21,899.68			\$ 21,900
	151X5.1162	1132X5.223		
	1 FAK Additional Cost			16,363
a(2)	151X5.382	1132X5.79	1132X5.81	
	151X5.831		1132X5.178	
	151X5.1162	1132X5.223		
	1 Depot Spares @ \$14,397			\$ 14,397
a(3)	151X5.382	1132X5.79	1132X5.81	
	151X5.831		1132X5.178	
	2 SLOE's @ \$13,144.61			\$ 26,289
	151X5.1162	1132X5.223		
	2 SLOE's Add'l @ \$366.00			732
	151X5.1053	1132X5.205		
	Emergency List of System 4 Spares			2,981
a(4)	151X5.614	1132X5.115		
	151X5.797	1132X5.167)		
	2 FAK System 5	1132X5.194)		\$ 20,864
	151X5.630	1132X5.117		
	Modified FAK for System 5		3,166	
		TOTAL		\$106,692

## b. Support Requirement No. 3:

- (1) Two (2) Fly-away Kits for System No. 4 in accordance with Equipment List AA-X dated 8-10-59, Revision C, which supersedes lists dated July 1, 1958, Rev. A., March 24, 1958 and October 30, 1957.
- (2) One (1) Depot Spares List for System No. 4 in accordance with Equipment List BB-X dated 8-10-59, Revision C, which supersedes lists dated March 24, 1958, Revision A and October 30, 1957.
- (3) Two (2) SLOE's for System 4 in accordance with Equipment List CC-X dated 4-7-59, Revision B, which supersedes lists dated March 24, 1958, Rev. A, and October 30, 1957.

Reference Contractor's CMCC #'s			Proposal	Contract
Ltr.	S. W.	C. E.	Cost	Amount
(1)	151X5.382	1132X5.79	1132X5.81	
	151X5.831		1132X5.178	
	151X5.1173		1132X5.225	
	2 FAKs @ \$21,899.68 less \$840.17			\$ 42,119
	per list of deleted items			30,046
	2 FAKs Add'l Items @ \$15,023			\$ 72,165

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## b. Support Requirement No. 2:

- (1) Fly-Away Kits: Portable Fly-Away Kits (FAK) each providing one set of parts, components, and sub-assemblies necessary for the maintenance of each rack of data reduction equipment in accordance with the following:

<u>Rack</u>	<u>Quantity</u>	<u>List</u>	<u>Date</u>
A Rack	3	Y-A Rev B	7 Oct 1957
B1 & B2 Racks	2	Y-B Rev B	7 Oct 1957
E Rack	2	Y-E Rev A	11 Apr 1958

- (2) Depot Spares: In accordance with List XX dated 16 April 1958 and our letter DFG-5517 dated 12 November 1958 and attached list of additional spares.

<u>Reference Contractor's CMCC #'s</u>	<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u> <u>S. W.</u> <u>C. E.</u>		
151X5.382      1131X5.83      1132X5.80		
151X5.837                      1132X5.179		
151X5.1106                      1132X5.210		
3 Sets Spares for A Rack @ \$2,130	\$ 6,390	
2 Sets Spares for B Rack @ \$625.00	1,250	
2 Sets Spares for E Rack @ \$226.76	454	
151X5.837		
Deleted items that cannot be used elsewhere in Project	317	
151X5.1107                      1132X5.211		
Depot Spares @ \$12,529.05	12,529	
Add'l Spares Est. \$2,110.33	2,110	
	<u>\$ 23,050</u>	
Balance Available	6,330	
TOTAL	<u>\$ 29,380</u>	\$ 29,380

## c. Support Requirement No. 3:

- (1) Fly-Away Kits: Portable Fly-Away Kits (FAK) each providing one set of parts, components, and sub-assemblies necessary for the maintenance of each rack of data reduction equipment in the following quantities:

<u>Rack</u>	<u>Quantity</u>	<u>List</u>	<u>Date</u>
A Rack	4	Y-A Rev B	7 Oct 57
B1 & B2 Racks	4	Y-B Rev B	7 Oct 57
C Rack	20	Y-C Rev B	7 Oct 57
E Rack	12	Y-E-X	10 Apr 1958
F Rack	22	Y-F Rev C	5-12-59

- (2) Depot Spares: Two (2) Depot Spares lists in accordance with List Y-X, Rev. A, dated 5-14-59, which supersedes List Y-X dated 15 July, 1958 and List Y, Rev. B dated 7 Oct. 1957.

<u>Reference Contractor's CMCC #'s</u>	<u>Proposal Cost</u>	<u>Contract Amount</u>
<u>Ltr.</u> <u>S. W.</u> <u>C. E.</u>		
151X5.382      1131X5.83      1132X5.80		
151X5.837                      1132X5.179		
151X5.1106                      1132X5.210		
4 Sets Spares for A Rack @ \$2,129.39	\$ 8,518	
4 Sets Spares for B Rack @ \$624.58	2,498	
20 Sets Spares for C Rack @ \$1,805.65	36,113	
12 Sets Spares for E Rack @ \$338.16	4,058	
22 Sets Spares for F Rack @ \$1,132.75	25,053	

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